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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/605,100	09/09/2003	Tina J. Wagner	FIS920030249US1	2099
32074	7590	05/26/2005	EXAMINER	
INTERNATIONAL BUSINESS MACHINES CORPORATION DEPT. 18G BLDG. 300-482 2070 ROUTE 52 HOPEWELL JUNCTION, NY 12533			VU, DAVID	
			ART UNIT	PAPER NUMBER
			2818	
DATE MAILED: 05/26/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

2

Office Action Summary	Application No. 10/605,100	Applicant(s) WAGNER ET AL.	
	Examiner DAVID VU	Art Unit 2818	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 21-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03/29/05 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/ Restriction

1. Since Applicant cancelled all of the claims (Claims 1-20), the restriction requirement is deemed moot.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 21-28 and 40 are rejected under 35 U. S. C. 102(b) as being anticipated by Gilton et al. (US Pat. 6,143,611, herein after Gilton).

Gilton discloses in figs. 5-7 a FET device comprising: a substrate 32 with a top substrate surface upon which a gate electrode stack is formed; gate electrode stack (col. 3, line 62 through col. 4, line 1) comprising: a gate electrode 34 formed over a gate dielectric layer 33, gate dielectric layer 33 being formed on top substrate surface 32; gate electrode 34 having a top gate electrode surface and having gate electrode sidewalls; sidewall spacers 62 formed on gate electrode sidewalls aside from gate electrode 34; a cap layer 35 having outer edges and a top formed on top gate electrode surface; a hard mask 39 formed on top of cap 35; notches formed in

Art Unit: 2818

outer edges of cap layer 35 recessed from gate electrode sidewalls; notches in outer edges of cap layer 35 being filled with protective plugs 50 formed on top of gate electrode layer 34 (col. 5, lines 11-33); and sidewall spacers 62 reaching along gate electrode sidewalls to above a level at which protective plugs 50 contact gate electrode 34 whereby sidewall spacers 62 are contiguous with and overlapping protective plugs 50 covering sidewalls of gate electrode 33 and a raised source/drain region 64 on top of said silicon layer 32 aside from spacers 62 (col. 5, lines 42-47).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 29-39 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Gilton (US Pat. 6,143,611) in view of Chang et al. (US Pat. 6,030,863, herein after Chang).

Gilton discloses in figs. 5-7 a FET device comprising: a substrate 32 with a top substrate surface upon which a gate electrode stack is formed; gate electrode stack (col. 3, line 62 through col. 4, line 1) comprising: a gate electrode 34 formed over a gate dielectric layer 33, gate dielectric layer 33 being formed on top substrate surface 32; gate electrode 34 having a top gate electrode surface and having gate electrode sidewalls; sidewall spacers 62 formed on gate electrode sidewalls aside from gate electrode 34; a cap layer 35 having outer edges and a top formed on top gate electrode surface; a hard mask 39 formed on top of cap 35; notches formed in outer edges of cap layer 35 recessed from gate electrode sidewalls; notches in outer edges of cap layer 35 being filled with protective plugs 50 formed on top of gate electrode layer 34 (col. 5, lines 11-33); and sidewall spacers 62 reaching along gate electrode sidewalls to above a level at which protective plugs 50 contact gate electrode 34 whereby sidewall spacers 62 are contiguous with and overlapping protective plugs 50 covering sidewalls of gate electrode 33 and a raised source/drain region 64 on top of said silicon layer 32 aside from spacers 62 (col. 5, lines 42-47).

Gilton fails to disclose the cap layer is an amorphous silicon layer formed of germanium and silicon ions. However, Chang teaches amorphous silicon/amorphous silicon-germanium is used for the gate electrode material (col. 5, lines 12-20). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Gilton by using the gate electrode material as taught by Chang, in order to increase the conductivity of the gate electrode (See Abstract).

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Vu whose telephone number is (571) 272-1798. The examiner can normally be reached on Monday-Friday from 8:00am to 5:00pm. If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR, Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



David Vu

May 23, 2005.